



mixtures thereof.

34. A process of forming integrated circuits comprising the steps of:

5 (a) contacting at least one wafer with a first composition comprising a component selected from the group consisting of at least one polymeric material, at least one polymeric precursor, and at least one monomer, and mixtures thereof, to deposit the component on the wafer and form a coating thereon; then

10 (b) imagewise exposing the coating to radiation such that exposed and unexposed coating portions are formed; then

(c) subjecting the coating to a second composition comprising carbon dioxide such that either one of the exposed or the unexposed coating portions are removed from the at least one wafer and the other coating portion
15 is developed and remains on the coating to form an image thereon; then

(d) depositing a metal-containing material or an ionic material on the surface of the wafer from which the exposed or the unexposed coating portions are removed; and then

(e) removing the exposed or unexposed coating portion from the
20 wafer;

wherein said steps (a) through (e) are performed in the IMPD without the at least one wafer being removed from the IMPD.

35. The process according to Claim 34, wherein said step (a) comprises depositing the component on the wafer using a chemical vapor deposition (CVD) method.

5 36. The process according to Claim 34, wherein the first composition comprises (1) carbon dioxide or (2) carbon dioxide and a co-solvent mixture.

37. The process according to Claim 34, wherein said steps (a) through (e) are repeated at least once without removing the at least one wafer from the IMPD.

38. The process according to Claim 34, wherein an intermediate layer is present between the coating portion and the substrate, and said process further comprising the step of selectively etching the intermediate layer using the developed coating portion as an etching mask.

39. The process according to Claim 38, wherein said step of selectively etching the intermediate layer comprises contacting the intermediate layer with a gas selected from the group consisting of oxygen, chlorine, fluorine, and mixtures thereof.

40. The process according to Claim 34, wherein the exposed coating portion has a lower solubility in carbon dioxide relative to the unexposed coating portions, and wherein said step of subjecting the coating to a second composition comprising carbon dioxide comprises removing the unexposed coating portion from the substrate such that the exposed coating portion remains.

41. The process according to Claim 34, wherein the polymeric material comprises a fluoropolymer.

42. The process according to Claim 41, wherein the fluoropolymer is formed from monomers selected from the group consisting of fluoroacrylate monomers, fluorostyrene monomers, fluoroalkylene oxide monomers, fluorolefin monomers, fluorinated alkyl vinyl ether monomers, cyclic fluorinated monomers, and mixtures thereof.

43. The process according to Claim 42, wherein the monomers are selected from the group consisting of 2-(N-ethylperfluorooctane- sulfonamido) ethyl acrylate, 2-(N-ethylperfluorooctane- sulfonamido) ethyl methacrylate, 2-(N-methylperfluorooctane- sulfonamido) ethyl acrylate, 2-(N-methylperfluorooctane- sulfonamido) ethyl methacrylate, 1,1'-dihydroperfluorooctyl acrylate, 1,1'-dihydroperfluorooctyl methacrylate, 1,1',2,2'-tetrahydroperfluoroalkylacrylate, 1,1',2,2'-tetrahydroperfluoroalkyl-methacrylate, α -fluorostyrene, 2,4,6-trifluoromethylstyrene, hexafluoropropylene oxide, perfluorocyclohexane oxide, tetrafluoroethylene, vinylidene fluoride, chlorotrifluoroethylene, perfluoro(propyl vinyl ether), perfluoro(methyl vinyl ether), 2,2-bis-trifluoromethyl-4,5-difluoro-1,3-dioxole, and mixtures thereof.

44. The process according to Claim 34, wherein the polymeric material comprises a silicon-containing polymer.

45. The process according to Claim 44, wherein the silicon-containing polymer comprises at least one segment selected from the group consisting of an alkyl siloxane, a fluoroalkyl siloxane, a chloroalkyl siloxane, and mixtures thereof.

46. The process according to Claim 34, wherein the metal-containing material comprises at least one metal selected from the group consisting of aluminum, copper, gold, titanium, tantalum, tungsten, molybdenum, silver, and alloys thereof.